SAT-U05 / SEE THE CONCEPT

Two equations. One answer that fits both.

Read the visual model, then test the reasoning.

40 TICKETS · $400 TOTAL



20 adults × $12 = $240

20 students × $8 = $160

A valid ticket mix satisfies both attendance and revenue.

An event sells 40 tickets. Adult tickets cost $12, student tickets cost $8 and total revenue is $400. Let a and s be the adult and student counts. How many of each were sold?

SAT-U05 / WORK THE CASE

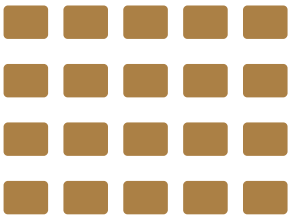
Two equations. One answer that fits both.

Follow the stated conditions. Check the answer against the original case.



ADULT TICKETS

$12 each



STUDENT TICKETS

$8 each

BOTH CONDITIONS

$$a + s = 40$$

$$12a + 8s = 400$$

Counts must satisfy tickets and dollars.

Solved mix: 20 adults + 20 students. The forty icons show the answer.

1 **START WITH STUDENTS**

Keep all 40 tickets at the lower price: 40 × $8 = $320.

2 **FIND THE EXTRA**

The actual revenue is $400 - $320 = $80 higher. Each adult replacing a student adds $12 - $8 = $4.

3 **COUNT THE UPGRADES**

$80 ÷ $4 = 20 adult tickets. The other 20 are student tickets. Both counts are nonnegative whole numbers.

TEST YOUR REASONING

Why does 30 adults plus 10 students fail?

It gives 40 tickets but $440. Check both constraints: 20 + 20 = 40 and 12 × 20 + 8 × 20 = $400.

Algebra check: s = 40 - a, so 12a + 8(40 - a) = 400; 4a = 80. A plausible count must also satisfy the original revenue.